Some Problems for Case Grammar*

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1. Several years ago, from this platform, I presented a paper with the title "A proposal concerning English prepositions," (Fillmore, 1966). That was the first public exposure of an effort that a few months later resulted in a longish paper called "The case for case," (Fillmore, 1968). I suggested in these papers that a new order of concepts should be incorporated into the theory of transformational grammar; I spoke of deep structure cases, and my hope was that their existence could be discovered and justified by syntactic criteria and that their presence in underlying representations of sentences would have the effect of reducing the burden of the semantic interpretation component of a grammar. In spite of an over-exuberant final section in "The case for case," I thought of my work, not as a proposal to eliminate deep structures altogether, but as an effort to find a level of syntactic structure which was deeper than that offered by the then standard theory. My position was what would now be called deep structure interpretivist; and since my efforts were largely directed toward the classification of lexical items and the analysis of complement patterns of ordinary verbs and adjectives, it was of the sort that today would be called lexicalist.

In his chapter on "Residual problems" near the end of Aspects of the Theory of Syntax, (Chomsky, 1965) Chomsky reminds us of the failure of the theory presented in that book to deal with the fact that "in some unclear sense" there is something in common between the [me] of [John strikes me as pompous.] and the [I] of [I regard John as pompous.]. There are semantic functions of noun-phrases which are not assignable to their syntactic positions on either the deep-structure or the surface-structure level. My suggestion in those early papers was that the notion of deep structure could be recast in such a way that certain sorts of semantic functions of noun-phrases could be represented directly and that the structuring of sentences according to which they can be said to have subjects and objects could be taken care of by means of the transformational apparatus of the grammar; my hope was that these semantic functions would turn out to include those mentioned by Chomsky in the "Residual problems" chapter.

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The deep case proposals derived more directly from an interest in languages that have case systems in their noun morphology. I am familiar with the classical grammar tradition of identifying one at a time the cases in which nouns could be inflected and listing with each case the "uses" to which it could be put. As a generative grammarian looking at this tradition, I surmised--in the way that generativists do--that where our ancestors went wrong was in confusing what was to be explained with what ought to be taken as given. In that earlier view, what was taken as given was the information that the language has such-and-such cases, and what the grammarian needed to explain was how each of the cases could be used. We should reverse this, I assumed, and should take the case uses as basic and regard the observable case forms as derivable from them by rules of the grammar.

I found encouragement in this ambition by the observation that the case uses had a lot in common between one language and another: one man's "Dative of Person Affected" was another man's "Accusative of Person Affected," and one man's "Ablative of Personal Agent" was another man's "Dative of Personal Agent." Because of this apparent commonality across languages, it seemed to me that the case uses should be posited for all languages, including then those which lacked morphological case inflections altogether. By this being done, the same sorts of underlying semantic functions could be seen as realized in the form of case endings in one language, as prepositional or post-positional constructions in another, or in some quite different way in a third.

I have learned a few things since those days: I now know what "ergative" means; from a number of extremely polite colleagues I learned about the kāraka theory of Pāṇini; I have become somewhat more conscious of the importance which semantic functions of the sort which have interested me have had in non-transformationalist but multi-level theories of grammatical structure; and, more importantly, I have in the meantime encountered an exceedingly large number of descriptive problems that turned out to be intractable within the model as I had been conceiving it.

I believe to this day that the basic ideas were not all wrong, in spite of the fact that most of the specific analyses I proposed in those first papers were bad ones. These days, partly as a kind of intellectual exercise, and partly out of nostalgia or stubbornness, I am in the process of preparing a version of case grammar with some of the snags worked out and some of the details worked in. That study is far from complete; what I hope to do in this paper is simply to expose some of the difficulties "of fact and principle" which the model faces, and maybe even to suggest, from time to time, that the proponents of alternative views are not always clearly better off with respect to these problems.

2. I see a transformational grammar with a case base as having in general the following properties. The propositional core of a simple sentence consists of a predicator (verb, adjective or noun) in construction with one or more entities, each of these related to the predicator in one of the semantic functions known as (deep structure)

cases. The cases identify the roles which the entities serve in the predication, these roles taken from a repertory defined once and for all for human languages and including that of the instigator of an action, that of the experiencer of a psychological event, that of an object which undergoes a change or movement, that of the location of an event, and so on. (I recognize the emptiness of this assumption in the absence of a coherent grammatical theory in which the cases play a crucial role. I will address myself to this question shortly.)

The cases exist in a hierarchy, and this hierarchy serves to guide the operation of certain syntactic processes, in particular that of subject selection. It figures in subject selection by determining which noun-phrase is to become the subject of the sentence in the "unmarked" instance. That case in a sentence which, according to the hierarchy of cases, outranks the others, is the one which has the noun-phrase it is associated with selected as the subject of the sentence.

Certain predicators have their own lexically determined subject choices, and there are furthermore certain subject choice options provided by the language--among them that provided in English by the passive transformation. A grammar must therefore provide some way of re-ranking the cases for particular sentences. (My present practice is to reflect the subject choice hierarchy in the left-to-right order of the cases in the deep structure representation of individual sentences, and to allow the subject selection process merely to select the left-most noun-phrase in the list. The transformations which re-rank these elements then are transformations which move some initially non-left-most element into the left-most position in the list of cases.)

The surface cases in case languages, and the prepositions or postpositions or other syntactic function indicators in other languages, are determined by various sorts of information about the sentence, just one of these being the identity of the deep-structure cases; others have to do with the operation of the subject and object selection processes, facts about definiteness and animateness and the like, and, for nouns that enter into the various types of locative constructions, the dimensionality of the entity being designated.

The lexical items in a language which are capable of serving as predicators--and this set includes not only all contentives but most connectives--can be classified according to the possible arrays of cases that they can occur in construction with. Lexical items can be further described by identifying the grammatical processes which are triggered by or made possible by their presence in a sentence.

Sentences that are embedded in underlying representations are embedded as occupants of some case role. By processes that are familiar if not well understood, embedded sentences can have complementizers attached to them, they can be nominalized, they can have some of their constituents "promoted" to become constituents of the sentences into which they have been embedded, and so on.

Very briefly, then, these are the main characteristics of a transformational grammar whose base component specifies the case

structure of sentences. I have left vague the way in which the case identity of a noun-phrase is to be symbolized, because that, as it happens, is one of our problems. I have left vague the relationship between the "entities" that have case roles in what I described as the structure of simple sentences, and the noun-phrases that show up in particular positions in sentences, because that is everyone's problem.

3. The whole thing makes sense only if there are good reasons to believe that there is an irreducible number of role types by which grammatical theory makes its contribution to semantic interpretation; if it turns out that this number is small; if there are reasonable principles according to which these role types can be identified; and if grammars in which they are incorporated into underlying representations are superior to those in which they are not. There are certain criteria that I have appealed to in attempting to determine the cases, and I will speak of them now. They are not outstandingly confidence-inspiring, given the fact that I have changed my mind so many times in the past few years about the analysis of a number of sentence types, but I believe there is something to them nevertheless.

First of all I make the assumption that there is in a single clause at most one noun-phrase (which may, of course, be compound) serving a given case role. If we accept this one-instance-per-clause principle, we are required to deal with apparent counter-examples either by showing that the putative identical case roles are in fact distinct, or by showing that the construction is better treated as an instance of clause embedding.

Let's consider first a situation in which the embedding analysis is preferred. Suppose that one of the case roles that we intuitively recognize is that of the Agent, and suppose that in a sentence like [John compelled his son to stab the usher.], we perceive agency in both what John does and in what his son does. The one-instance-per-clause principle requires us to analyze the sentence as being clausally complex, and it compels us not to analyze [compel to stab] as a single discontinuous verb. (If all languages were like English, with the elements of [compel to stab] distributed in different places in the sentence, we could say that this application of the principle is of use in beating dead horses with straw men. The principle takes on some interest, however, in a language in which the notion "compel to stab" has surface lexical unity.)

Let's consider next a situation in which we will allow ourselves to change our minds about the case identity of two noun phrases in a sentence. Take a sentence like [John resembles Fred.]. It might be believed that in this sentence the two nouns [John] and [Fred] have the same role. One reason for believing such a thing is that if the two noun-phrases straddling the verb [resemble] both designate entities which are more or less equally observationally accessible, it must always be true that if the first resembles the second, the second resembles the first. Since the analysis as a complex sentence does not suggest itself in this instance, the one-instance-per-clause principle gives me the responsibility of showing that the semantic

roles of the two nouns are distinct. I would have to say that the two entities are somehow taken in different ways. I might begin by suggesting that the sentence [John resembles Fred.] involves the judgment that certain properties observable in John are relatable to properties attributable to Fred, with the second noun-phrase serving to identify a standard according to which the entity named by the first noun-phrase is assigned some sort of a position. This being so, it should follow that the two roles associated with [resemble] can be occupied by instances of different types of noun-phrases, or by noun-phrases having different assumptions about existence or observability associated with them. It should be possible, in other words, to put in the second position, but not in the first position, noun-phrases which are generically understood or which designate non-existent entities, even when the noun-phrase in the first position is a referring expression. This prediction is borne out, because the two noun-phrases cannot be interchanged in properly understood readings of the sentences [That donkey resembles a unicorn.], [John resembles a horse.], or [John resembles his famous ancestor.].

So much for the first principle. Now sometimes a single predicator takes noun-phrases of different cases, occurring in one sentence with one choice of cases, in another with a different choice. Since in English every sentence has to have a subject, one place to look for the variety of cases is in subject position. We find that the relation which a subject has to its clause can vary from one predicator to another, naturally, but it can also vary in different sentences with the same predicator.

By illustration, take sentences containing the adjective [warm]. A subject noun-phrase with this adjective can name: the experiencer of this sensation; something which when used can result in someone experiencing the sensation; a time period during which they can experience the sensation; or a place in which they can experience the sensation. If we want to assign names to these functions, we might speak of Experiencer, as in [I am warm.]; Instrument, as in [This jacket is warm.]; Time, as in [Summer is warm.]; and Location, as in [The room is warm.].

My second assumption, then, is that if one takes a predicator which is intuitively seen as assigning different semantic functions to noun-phrases that occur in specific syntactic positions with respect to it, there should be a natural stopping point in any attempt to classify these semantic functions. If that turns out to be true, and if it is also true that one finds comparable lists of functions in the analysis of noun-phrases that occur with other predicators, we can believe that we are on the right track. We might be encouraged, for example, if we tried an analysis of the subject roles occurring with the adjective [sad], because it is not unnatural to claim that for sentences like [John was sad.] and [The movie was sad.], the emotion-experiencer role of [John] in the former is analogous to the sensation-experiencer o role of [I] in [I am warm.], and that the experience-eliciting role of [movie] in [The movie was sad.] is analogous to that of [jacket] in [This jacket is warm.]

It is one thing to see if there is a stopping place in the attempt to list the semantic functions that go with any given predicator, another thing to see if the list of semantic functions found for different predicators have enough overlap to make it believable that there is a small list for grammatical theory in general. It is still another thing to inquire whether the functions that by this process we take as distinct are in fact "emically" distinct, and for that we need to find other sorts of evidence. I believe that such evidence can be found, though it requires an appeal to syntactic constructions which are not in themselves perfectly well understood. When the comparative construction compares two noun-phrases and when the regular coordinate conjunction construction unites two noun-phrases, the noun-phrases which are brought together must have the same case role in the sentences in which they occur. With [sad] it is possible to compare two Experiencers, as in [John is as sad as Fred.], and with [warm] it is possible to compare two Instruments, as in [My sweater is warmer than your jacket.]; but such mixtures of cases as that suggested by [Lately I've been sadder than "Love Story."] or [My jacket is warmer than Texas.] will not do. Similarly with conjunction, it is all right to say [John and Fred are both sad.] or [My sweater and your jacket are both very warm.], but not [John and the movie both became very sad near the end.], or [My sweater and I are both nice and warm.].

The assumptions that I've mentioned so far are for determining when we are dealing with distinct cases with given predicators, and I may refer to them as principles of contrast. Next we can consider a principle of complementarity. (Those of you who are over forty will be familiar with these terms.) Sometimes we find in different sentences semantic functions which in detail are partly alike and partly different, their differences being systematically relatable to differences in the semantic properties of the lexical material they are in construction with. (I refuse even to mention the terminological horror of speaking here of allo-cases of the same caseme.) With verbs of motion, like for example [go], we can specify a starting point and a destination, as in a sentence like [He went from the top of the hill to the cemetery gate.]; for transformation verbs we can specify the earlier state and the later state, as in a sentence like [He changed from a 96-pound weakling into a famous football hero.]; and for verbs of temporal lapse we can talk about the starting and ending point of a time period, as in [The pageant lasted from sundown until midnight.]. My inclination is to refer to the two points identified in all of these earlier/later indications as different instances of the same cases, namely Source and Goal. Depending on the type of predicator, the Source and Goal are interpreted as earlier and later locations, earlier and later states, or earlier and later time points.

Having come upon such a decision, we must immediately figure out what to do with certain apparent counter-examples. As my sample motion verb I deliberately chose the verb [go], because it is one which is a motion verb pure and simple. [go] and [come] and [move] are just about the only motion verbs in English which have associated with them no understanding of manner, means or medium.

In sentences with other verbs of motion, however, it might indeed look as if we need to distinguish as separate cases temporal Source and Goal from spatial Source and Goal. To see what I mean, consider the fact that we can say either [He walked from the top of the hill to the cemetery gate.] or [He walked from noon until sundown.]. If we say that the verb [walk] can occur with either temporal or spatial Sources or Goals, we are then required to come up with special explanations of why they cannot all occur in a single sentence, and why they cannot be mixed in the same sentence. That is, we cannot say [He walked from the top of the hill to the cemetery gate from noon until sundown.]; nor can we say [He walked from the cemetery gate until midnight.] or [He walked from noon to the zoo.]. To account for these facts we must either (i) increase the number of cases by positing both spatial and temporal Source and Goal cases and introduce some constraints on their co-occurrence possibilities in single clauses, or (ii) reanalyze sentences with [walk], [swim], [run], [drive], etc., in a way that will allow them to be treated as referring either to types of activities, describable in terms of their durations, or to types of movements, describable in terms of their paths. The question of which of these choices is preferable is one of the problems I will discuss shortly.

4. The principles I have just been talking about are fairly va ue, they seldom lead to beautifully unambiguous results, and they are always subject to other sorts of considerations. Be that as it may, I have lately become comfortable with the following cases: Agent, Experiencer, Instrument, Object, Source, Goal, Place and Time. There is one more, but I'm saving that till later. I used to talk about "Datives," but I have reanalyzed the old Dative by spreading it around among the other cases. Where there is a genuine psychological event or mental state verb, we have the Experiencer; where there is a non-psychological verb which indicates a change of state, such as one of dying or growing, we have the Object; where there is a transfer or movement of something to a person, the receiver as destination is taken as the Goal. I no longer confuse selection restrictions to animates with true case-like notions.

There are certain difficulties in stating exactly what one ought to mean by "Agent," but I am willing to leave those unresolved for now. I take the Instrument, for which I would be happy to find a better name, as the case of the immediate cause of an event, or, in the case of a psychological predicator, the stimulus, the thing reacted to. When the Instrument role is occupied by a sentence, that sentence identifies an event which is understood as having some other event or state as its consequence. The Object case is that of the entity which moves or which undergoes change, and I still use it as a wastebasket. Sentences embedded to Objects can serve to identify, for example, the content of a psychological event, as with verbs of judging or imagining. Source and Goal are used in the ways I suggested earlier, and in a few other ways as well. Since the Goal case is used to indicate the later state or end result of some action or change, it can absorb what I used to call

"Resultative" or "Factitive"; that is, it specifies the end-result role of a thing which comes into existence as a result of the action identified by the predicator, and in [I wrote a poem.] or [I constructed a bridge.] A sentence embedded as Goal, therefore, is one which identifies the resulting state or event in a causative construction.

The case hierarchy is that of the order in which I listed them: Agent, Experiencer, Instrument, Object, Source, Goal, Place, Time. The case in a given sentence which occurs first on this list determined what is to be the subject of the sentence in, as I said, the "unmarked" instance. For psychological verbs it is important to notice that the Experiencer precedes the Instrument (or "cause") and the Object (or "content") and will therefore be in first position in the deep structure. The so-called Psych-Movement verbs are verbs which require a transformation which moves the highest non-Experiencer noun-phrase into the first position. The Passive transformation is a more general re-ranking transformation, having the effect of putting an original Experiencer or Object or Goal noun-phrase into first position, inducing a modification in the form of the verb, and associating the preposition [by] with the noun-phrase that got demoted. (I once associated the preposition [by] with the Agent noun-phrase, but that was wrong. It is introduced as a result of the operation of the Passive transformation and is associated with whatever noun-phrase was in highest-rank position in the deep structure.)

5. There are innumerable problems that come up in any effort to fill in the details of a grammar like this, and I will devote the rest of this paper to a discussion of some of them. The first that come to mind are those that have to do with the notion of agency. What should we understand about a sentence if we know that one of its cases is Agent? How do we determine whether a verb obligatorily or optionally takes Agent noun-phrases? In what way are notions like movement, intention, causation and result related to understandings of sentences containing Agent noun-phrases.

The model allows only two cases for noun-phrases that can appear in subject position in simple caused-event sentences, requiring both a special account of the analysis of sentences that say something about things caused by natural forces and a special explanation of situations in which there is a chain of causation. To take the second issue first: there are many events in the world which involve chains of causation. If my claim about the case structure of sentences is right, it should follow that where there is a causation chain, with one thing leading to another, the grammar of simple sentences allows mention of only the principal cause and the immediate cause, and does not allow mention of any of the intervening elements. I believe this is so, and I'll use an example offered by Donald Davidson to illustrate it. Suppose a man swings a baseball bat and the bat hits a baseball, suppose the baseball moves through the air and impinges on a window, and suppose that as a result the window breaks. The grammar of simple sentences in English allows us to say [The man broke the window.] or [The baseball broke the window.], but not, as a

description of the situation I just described, [The bat broke the window.]. The nouns that can appear as the subject of the transitive verb [break] name either the principal cause, the Agent, or the immediate cause, the Instrument, but not any intervening cause. Furthermore, if we wish to express the role of both Agent and Instrument in a sentence, we can say [The man broke the window with the baseball.] but not, as a description of this situation, [The man broke the window with the baseball bat.].

I believe, therefore, that I can justify having at most two cases related to sentences involving causation; but the next thing to consider is how one decides which of these two cases should absorb the role of phenomena which are not subject to anybody's control but which cause things to happen, as when we speak of things being caused by lightning, tuberculosis or erosion.

The possibility of positing a new case, say "Force," seems unnecessary, since this putative Force case never occurs in contrast with either Agent or Instrument. (I recognize, however, the force of a suggestion of Rodney Huddleson's (1970). One way of describing the difference between the intentional and accidental interpretations of John's involvement in actions identified by the sentence [John broke the window.] is to say that on one reading [John] is Agent, on the other [John] is Force. On the Agent interpretation, we think of John as a sentinent being; on the Force interpretation, we think of John as a force of nature.)

The question is, if Force should be grouped with either Agent or Instrument, which one should it be? Let us suppose that we decide to link forces with agents. The "principal cause" interpretation of the Agent case seems for many sentences to be quite adequate: if thunder frightened the baby by the baby's having perceived the thunder, then the thunder can be certainly thought of as the principal cause of the baby's experience. But there are a few problems associated with this assignment. For example, the case hierarchy puts an Agent always in first position, making it in general possible for sentences having Agents to contain Instrument phrases as well, but impossible for sentences having Instruments as subjects to contain Agents as well. If our putative case Force were absorbed into the Agent case, it would then be necessary to add the special information that Agent noun-phrases which represent acts of God or changes in nature fail to occur in sentences which contain Instruments or instrumentally construed [by]-clauses. This is to account for the fact that we do not find sentences like [Air pollution killed my petunias with cyanide.] or [The thunder frightened the cattle with lightning.]. If, on the other hand, the Force were grouped with the Instrument rather than with the Agent, such facts would turn out not to be special facts about force-of-nature sentences, but would already be explained by a combination of the one-instance-per-clause principle and the case hierarchy.

Another reason one might have for absorbing Force into the Instrument case is that then the natural-force noun-phrases would be seen as having the same role in sentences about their typical event-causing function and in sentences about situations in which

they are controlled by some agent after all. It is well known that one can control phenomena in nature either by being God or by being trained and equipped in such arts as cloud-seeding and germ warfare. The assignment of natural-force noun-phrases with the Instrument case would also be consistent with my view that it is possible for the Instrument case to be occupied by a sentence, but not possible for the Agent; the benefit here is that a great many of the natural-force noun-phrases can be thought of as being derived from sentences.

There are languages in which the forces of nature are sometimes thought of as animated or deified by the speakers of the language; for such languages, we might be advised, the force-of-nature nouns should be assigned the Agent case. I don't believe that will be necessary. If it turns out that all natural phenomena are thought of as personified, then it seems quite unnecessary to make such an interpretation for the simple reason that we could just as well say that we are talking about the beliefs of speakers as that we are talking about the properties of their grammars. If, on the other hand, it turns out that some forces of nature are personified while others are not, then we could indeed agree to assign the nouns the Agent case in certain sentences, but we would do so by assuming that here the words are functioning in fact as proper names and refer to things like the god of thunder or the spirit of fire rather than to the phenomena themselves.

Talk about Agents and Instruments having a role in sentences that have something or other to do with causation raises the question of the case structure of the English verb [cause]. I recall once hurriedly writing that the verb [cause] is one which requires an Agent, but that is clearly false. In sentences like [The glare of the sunlight caused the accident.] or [The accident caused the revolution.] there is no allusion to agency, and it would obviously be necessary to attribute Instrument-hood to the subjects of these sentences (in the sense of Instrument that I have been discussing). We can see, therefore, that the Agent case is at least not obligatory. Is it then optional? Can we say that in a sentence like [She caused the accident by screaming.] we have as Agent [she] and as Instrument a [by]-clause coming from [She screamed.]? The reasons for suggesting that must be justified independently of the process by which the subjects of [by]-clauses can assume a role as subjects of [cause] quite independently of their being understood as Agents, as in sentences like [She caused the accident by having left her drapes open.]. There will be more to say about the verb [cause] below.

6. The recognition of the need to deal with causation as a consequence-relation between two events comes up in the problem of determining the case structure of certain kinds of "impingement" verbs--that is, verbs of impact like [hit] and [strike], and verbs of pressure like [push] and [shove]. It has been through an attempt to give a uniform case structure analysis of these verbs that I have been forced to give up the lexicalist position I started out with and to recognize more indirect sorts of relations between deep and surface structures than I had been originally willing to countenance.

Suppose that we would like to characterize certain facts about impingement verbs in terms of their similarity to verbs of motion, and suppose that we view them as expressing the situation in which there is something which moves and there is some destination or goal or direction which further characterizes this motion. The thing which moves, as in the straightforward analysis of motion verbs, is the Object, and the thing to which it moves, or on which it impinges, can be thought of as the Goal. In sentences like [John hit the fence with his cane.] or [John hit his cane against the fence.], John is the Agent, the fence is the Goal, and John's cane is the moving Object. In [John pushed against the wall with his cane.], John is the Agent, the wall is the Goal, and again John's cane is the Object. These sentences are thus seen as having a certain similarity with sentences like [John dropped the dishes onto the floor.], the detailed differences in the ways in which we interpret the cases being related to the different semantic properties of the verbs. (This analysis differs, by the way, from one given in my paper on "The grammar of hitting and breaking," just recently published but written a long time ago (Fillmore 1970)).

The analysis seems quite adequate in sentences in which one speaks of the thing which is impinged on as merely being there, but a problem arises when we consider how to analyze sentences like [I hit the ball over the fence.] and [I pushed the table into the corner.]. What we are dealing with here are situations in which the impinged upon thing itself moves. If there were reasons for treating the impinged upon thing as the Goal in the earlier analysis, there are reasons for treating it as Object in these sentences and for treating [over the fence] and [into the corner] as exemplifying the Goal case. Either these verbs have to be given different analyses for their occurrence in these different sentences, or the second set of sentences needs to be reconstructed in such a way as to allow the same entity to be both Goal and Object.

This last choice requires us not only to recognize sentences about hitting the ball over the fence or pushing the table into the corner as complex, but as complex in a way which requires some sort of association between clauses that cannot be thought of as compounding the two together or as embedding one into the other. We need to be able to recognize that the latter sentences involve an understanding of event causation, according to which the occurrence of one event has the occurrence of another event as its consequence. In [I hit the ball over the fence.] we would have to posit something like (clause i) [I hit the ball] and (clause ii) [The ball went over the fence.], the two clauses embedded to a higher predicate that has a meaning suggested by the word [cause], predicating the event-causation relation between the two clauses. The first clause is embedded as Instrument, in its immediate-cause function; the second clause is embedded as Goal, in its resulting-state function. In the first clause [the ball] is Goal, in the second clause it is Object.

The consequence of this decision is the acceptance of a model of grammar in which the rules for transforming deep structures into surface structures will be fussier than I used to want to think, and

the admission of prelexical transformations that are in fact a bit more complicated than McCawley's Predicate Raising transformation (McCawley, 1968). We have here a situation in which one event serves as the immediate cause of some other event. Somehow the transformations which will convert a structure meaning something like [My hitting the ball caused it to go over the fence.] into [I hit the ball over the fence.] will have to form out of all three verbs a lexical construct of the form [by hitting cause to move] and will have to conflate (to use Leonard Talmy's term) the two constituent clauses into one. In the absence of detailed and principle proposals for designing a grammar which incorporates rules which do what I think needs to be done, all this is quite unsatisfactory; but I know that when and if it is done, it will serve to make English look a little bit more like those languages in which the only way to say [I hit the ball over the fence.] is to say something like [I hit the ball; it went over the fence.], and the only way to say [I knocked the man down.] is to say something like [I hit the man; he fell down.].

The restructuring processes that I have been alluding to appear to be governed by specific lexical items, and that suggests that the conflation process should indeed be construed as one which creates complex lexical constructs in a way suggested by McCawley's Predicate Raising principle, with the lexicon specifying which of these creations have been lexicalized in the language. It is possible to push against a table and as a result to have that table move into the corner. English allows us to say [He pushed the table into the corner.]. It is possible to lean against a table and as a result to have that table move into the corner. English does not allow us to say [He leaned the table into the corner.]. One way of capturing such facts is to say that the lexicon of English contains the information that [push] substitutes for [by pushing against cause to move], but it fails to specify a lexical item capable of substituting for [by leaning against cause to move].

Notice that it was my attempt to preserve certain principles of case structure that forced me to consider this possibility. I want to believe that there is a basic sense of verbs like [push] and [hit] according to which they can be assigned their deep-structure case frames, that the case-frames associated with verbs of motion include the Source and Goal cases in their change-of-location functions, and that both the semantic and syntactic additional properties of sentences in which these verbs suggest the notion of resulting movement can be accounted for by the kind of process that I have in mind. The model will have to point out, for [push], that the Goal noun-phrase takes the preposition [against] in the unconflated clause, but that the lexical item [push] which replaced the construction formed for the conflated clause takes that same noun-phrase as its direct object. This not only accounts for the fact that clauses with [push against] do not occur with location-changing Source and Goal expressions while clauses with just [push] may, but it also accounts for the fact that the idea of resultant motion exists also in the superficially simple sentence [John pushed the table.].

7. If we agree that there are reasons to reach these conclusions for cause-to-move verbs like [push], [hit], etc., we might then ask questions along a similar line about the analysis of another class of verbs involving both the notion of movement and the notion of manner, means or medium of movement--verbs like [float], [ride], [swim], [slip], etc. Each of these verbs looks as if it can be given two case analyses, depending on whether it is interpreted as a verb of motion or not, the two analyses requiring furthermore that the spatial and temporal interpretations of Sources and Goals lead to an addition to the total number of cases. That is, we can say either [He swam from noon until 2 o'clock.] or [He swam from the end of the dock to the shore.]. This, you will recall, is one of the contexts which challenged the use I wanted to make of the complementarity principle for the Source and Goal cases.

To use examples borrowed from Leonard Talmy, we can speak of a bottle floating on the water, and we speak of the bottle floating into the cove. In the one case there is just the matter of some object being suspended by its medium; in the other case there is the additional matter of its moving from one place to another. Grammatical theory needs to provide some way of separating these two aspects.

A semantic reason for wanting to be able to deal separately with the motion and manner aspects of certain expressions containing these verbs is that under certain conditions we can focus on one or the other of the two. Take for example permission-seeking sentences involving the verb [swim]. Suppose you are the guard at the entrance of a cave that a stream flows into, and I am going to ask you for permission to enter the cave swimming. Suppose in the first instance that I am already in the water and swimming. In this case it is simply known in advance that I am swimming, and what I need to ask permission for is to enter the cave. In this first case what I would say is [May I swim in?], with heavy stress on [in]. In the second instance, suppose you have already given me permission to enter the cave, and what I am after is your consent to do so in the water. In that case what I must ask is [May I swim in?], this time with heavy stress on [swim]. Verbs which do not have this sort of double-barreled interpretation, verbs like [come] and [go], do not have this variety in stress placement potential either. I can say [May I come in?], but not [May I come in?]. The stressing for [swim] when it is "used as a verb of motion" is the same as that of the pure motion verbs. Possibly what we need, then, is an analysis by which the motion-verb [swim] is really complex, being a substitute for something like [by swimming go], with the stressing of [in] in the surface sentence determined according to whether the underlying sentence contains a [go]-clause or not.

Grammatical theory, then, must provide some way of recognizing an association between two clauses such that the one designates what one might roughly call the manner in which the event mentioned by the second clause takes place. In this instance, having the two clauses embedded to Instrument and Goal and commanded by the verb

[cause] does not seem particularly natural. In defense of the possibility of calling on some sort of causal notion for the analysis, however, it should be pointed out that the English verb [cause] has not only the interpretation by which one event has another event as its consequence, but has other uses as well. That is, there is both a stative verb [cause] and an active verb [cause]. The active verb appears in a sentence like [Susan's screaming caused Fred to drop the tray.]; the stative verb appears in the sentence [Susan's living nearby causes me to prefer this neighborhood.]. A not particularly elegant way of using an analogous analysis of the manner-of-motion verbs as I suggested for the cause-motion verbs discussed in the last section is to embed the manner clause in the Instrument, the motion clause in the Object, and have both clauses be commanded by [cause]--this time, the stative verb [cause]. (The difference is that the use of the Goal case for the [hit] and [push] verbs suggested that the motion clause indicated a consequence or result of the action indicated by the Instrument clause.) Now we at least have some way of talking about the two senses of [cause], we have set up structures which will require our poorly understood but by now familiar process of conflation, we have created the need for lexical rules of the form "Substitute [swim] for the lexical construct [move by swimming]," and we have underlying structures for English which look something like what we will need for languages which do not allow conflation in these situations but which require surface sentences to keep the verbs separated (as in Spanish [entró flotando], "entered floating," or Japanese [aruite kita], "came walking").

In the next section I will suggest that what might have looked like straightforward instances of causatives requiring nothing more than McCawley's Predicate Raising might really involve something more like the conflation processes I have in mind. In particular I will propose that [kill] will turn out to be the lexical substitution for the construct [by doing something cause to die] rather than for the construct [cause to die].

8. I have said nothing so far about the two cases that I call Location and Time. That is, I have said nothing about place and time notions independently of expressions about changing or moving. One possibility for dealing with these cases is that of saying that they are optional complements of essentially any predicator. Another possibility is that of saying that clauses that are capable of designating actions or events or situations which can be located in space and time are themselves to be embedded into higher sentences containing as their main verb something like [occur] or [happen], with the understanding that it is this higher verb which takes Location-and-Time-introducing cases. (Some verbs take Location and Time complements directly, as for example [be] in one of its uses, [live], and [spend], as in [The beer was in the garage yesterday.], [I lived in Milwaukee in the forties.], and [Jeffrey spent Tuesday afternoon at the beach.].)

One reason one might have for accepting a Location-and-Time-introducing higher sentence with [occur] is that its presence can

serve to explain conditions under which the conflation process is blocked. I'd like to illustrate this point by considering the analysis according to which [kill] is taken as a lexical substitution for [cause to become not alive]. On McCawley's analysis there is a single chain of embedding in structures yielding the verb [kill]. If for my sentences about pushing tables into corners and hitting balls over fences there were reasons to separate the clauses which designated the causing event from the clauses which designated the resulting event, there may well be equally good reasons for assuming the same for verbs like [kill]. That analysis, however, would require that the Instrument or causing clause contain a verb that never shows up on the surface, something having the meaning of [act] or [do something]. An analysis we might give to [John killed the rat.] would be something like [John's actions caused the rat to die.]. The verb [kill], then, substitutes for the conflated-clause construct [by doing something cause to die].

Since we are dealing here with two distinct events, each will have, in the world in which it occurs, its own separate place and time coordinates. If either of the clauses designating these two separate events has its own time and place coordinates specified, by being separately embedded to [occur], the conflation is not possible. If I was standing on the Ohio side of the border on Tuesday of last week and shot an arrow at a cougar on the Indiana side, and if the cougar then wandered into Illinois and died of the wound on Friday, I cannot say that I killed a cougar in Ohio, or in Illinois, or in Indiana, or that I killed it last Tuesday or last Friday. I <u>can</u> say, however, [I killed a cougar in the middle west last week.], and that is because the conflation process is possible if the event-chain sentence is left intact but embedded as a whole to the higher verb which assigns the location in space and time to the whole sequence.

9. There are now some additional problems with clauses that indicate movement. The first thing to notice is the fact that Source and Goal, the starting point and the destination, do not exhaust the complement possibilities for verbs of motion. In addition to the complements of Source and Goal, there is the complement type that David Bennett has called "Path," (Bennett 1970) exemplified in the last phrase of [He walked from the cemetery gate to the chapel along the canal.]. A particularly interesting property of the Path (or "Itinerative"?) case is that a sentence with the path designated can contain an unlimited number of Path expressions, as long as these are understood as indicating successive stretches of the same path. This can be seen in a sentence like [He walked down the hill across the bridge through the pasture to the chapel.].

Superficially, at least, the Path case requires a qualification of the one-instance-per-clause principle. As it happens, the Location and Time cases do, too. Consider a sentence like [He was sitting under a tree in the park on a bench Tuesday afternoon about three o'clock.], a type of sentence discussed by Bennett.

It's clear that we have in this sentence just one place specification and just one time specification, so on the semantic level the one-instance-per-clause principle is not violated; but I cannot say more than that. There are paraphrases of these constructions by which all of the noun-phrases that need to be linked together can be linked together by means of relative clause embedding and conjunction, but since such a way of dealing with the problem does not seem applicable to the problem of the multi-phrase Path, there may be other ways of seeing what is going on.

10. But now, what about all these prepositions? If the cases indicate the basic semantic functions of nouns, how does the case apparatus play a role in determining the selection of specific prepositions like [at], [on], [in], [to], [onto], [from], [off of], [out of], [via], [across], [through], as well as [along], [under], [beside], and the rest. The principles of contrast suggest that, for example, [to], [onto] and [into] are all instances of the Goal case, because although expressions containing them can occur with Source expressions, they cannot occur in the same sentence with other Goal expressions. But the principle of complementary distribution when based on surface evidence fails to show their identity. That is, we can speak of something as being located [at the corner], [on the corner], or [in the corner], or as moving [from the corner], [off of the corner], or [out of the corner]. The only way we have for preserving the complementarity principle for the selection of individual prepositions and for claiming that the prepositions that we would intuitively like to group together are markers of the same case, is to impute certain differences to the underlying structure of the associated noun-phrases and say that these deep differences are what determine the selection of individual prepositions. Following work by Geoffrey Leech (1970), we might want to say that nouns that occur in locative expressions can have imputed to them such properties as that of being a point or a surface or a volume, or that of being a part of a surface or a volume, or that of being a point or an area above or below or behind or in front of or to the side of some object, and so on. Innumerable ways of representing this information suggest themselves; whatever means we come across eventually for showing these distinctions in underlying representations, I assume at least that there won't need to be any changes in our understanding of the case relations themselves.

11. Expressions of duration and distince introduce new orders of problems for a case analysis of verbs of movement and change, because they somehow seem to <u>combine</u> the Source and Goal notions into a single unit, a "hypercase" as it were. That is, we can say [He lived there from March until September.] or [He lived there for five months.], but combinations of these are not possible in simple sentences. We cannot say [He lived there from March for five months.]. Similarly, we can say [He walked from Palo Alto to San Jose.] or [He walked thirty miles.], but not [He walked from Palo Alto thirty miles.]. I have no proposals in mind for capturing this fact, and I recognize that when I acknowledge this as approblem for the theory, I must also

acknowledge the seriousness of the proposal that there might be some "hypercase" that similarly covers the Agent and Instrument case.

12. I have concentrated mostly on matters of space and time and movement in this paper, but let me now just briefly mention one or two other conceptual problems that the case grammarian faces. Just about every time that I have listed what I took to be the case notions needed for grammatical theory, I added, as if under my breath, "and possibly Benefactive." There are some unhappy facts about Benefactive constructions that suggest that the case status of the associated noun-phrase is simply not like those of the others. Benefactive constructions occur only in sentences with Agents, and only when the Agent's role is thought of as being deliberate or voluntary. To add Benefactive to the list of cases would thus require that the theory be complemented with a system of redundancy principles regarding the selection of cases for sentences, and would require furthermore that an understanding of the expression of intentional or voluntary acts be accounted for within the case apparatus. Since I am unwilling to face that possibility, my alternative is to reconsider the semantics of sentences with Benefactive phrases. It seems to me that a sentence of the form [John did it for me.] can be understood as involving three basic notions; the one who does something, the Agent ([John]); his action or "offering," the Object ([John did it.]); and the "direction" or receiver of that action or offering, ([me]), the Goal. It can be given a higher-sentence analysis, in other words, with Agent, Object and animate Goal, with the deed performed for somebody's benefit being expressed as the sentence embedded in the Object case. The obligatory presence of the Agent case is accounted for by the embedding context, and the intentionality of the performance on the part of the Agent can be built into the semantic structure of the higher verb. Verbs which satisfy these case frame and semantic conditions are verbs of the type [give] or [offer]. I propose, then, that sentences with Benefactives in them really come from more complicated constructions in which it is spelled out that somebody offers some deed to somebody else, and I posit for this an abstract verb of giving. The clause-conflating principles then, however they aretto be stated, will have the effect of changing something like [I give you (I do it)] into [I do it for you.]; for some languages, like for example Mandarin and a number of the languages of West Africa, the conflation process does not take place, and we get on the surface something like what I've proposed for the deep structure.

13. I have said that the experiencer of a psychological event is represented by a noun phrase in the Experiencer case, and that some other case will indicate the cause or the content of that psychological experience. In a sentence like [I imagined the accident.], I am inclined to call [the accident] the Object, and say that it identifies the content of the experience; in a sentence like [The noise frightened me.], I regard [the noise] as the Instrument, where

I have in mind that sense of Instruments which covers the stimulus or reacted-to situation in the description of a mental event. Sometimes both Instrument and Object co-occur in the description of some mental event, as in [The noise reminded me of the accident.]; that is why I believe both Instrument and Object are needed, in addition to Experiencer, in the description of psychological-event predicators.

These are intuitive decisions, and for a number of sentences my intuitions fail. In a sentence like [John loves Mary.], is Mary the cause or the content of John's experience? Do [fear] and [frighten] differ only in that the latter requires Psych Movement, or is the non-Experiencer case for [fear] the Object, that for [frighten] the Instrument? Understandings that can be assigned to the separate cases might then explain why we allow ourselves to conclude such different things regarding the inner world of somebody who says [I used to fear the devil.] as opposed to somebody who ways [The devil used to frighten me.]. Regrettably, I do not know how to answer these questions.

14. So far I have spoken only about certain conceptual problems associated with the effort to reconstruct a transformational grammar along the lines of a case grammar. You may have noticed that I have so far failed to give tree diagrams or any other sort of explicit symbolic representations of the structures I have been so cavalierly talking about. That failure stems not merely from a desire to save space. I simply have not found an acceptable notation for the sorts of things I want to be able to represent.

The main problem is how one can indicate the case role of noun-phrases and embedded clauses in the sentences of which they are constituents, and what consequences the choice of notation has for the operation of the grammar.

One possibility for a notation is the one by which cases are indicated as features on nouns. For a sentence like [John gave the flower to Mary.], the complex symbol associated with [John] contains the feature +Agent, that associated with [flower] contains the feature +Object, and that associated with [Mary] contains the feature +Goal. I find this inadequate, first of all because the notion of case has nothing to do with properties of nouns, but rather with relations or metarelations which nouns have with the rest of the clause in which they occur. A second reason for finding it inadequate is that it forces all instances of clause embedding to be treated as instances of adjunction to nouns. This might be workable in some contexts, but not, I think, in all. Thus, [John's screaming caused the accident.] can be interpreted as [The event of John's screaming caused the accident.], and [That John loves Mary amuses Mary.] can be interpreted as [The fact that John loves Mary amuses Mary.]; but it is not so easy to see what can be done for the embedded Object Sentence in, say, [I suspect that John loves Mary.].

A second possibility is that of assigning case features to verbs, and just saying that for each verb we specify as its valence a collection of case relationships, that the number of noun-phrases the verb can occur in construction with is determined by the number

of cases specified in its valence feature, and that the association of the individual noun-phrases with the individual cases is to be achieved by counting from left to right and by checking off the cases in accordance with the case hierarchy. This too might be workable, but it introduces at least two complications; the first being that keeping track of the case identity of noun-phrases will become difficult after movement transformations are applied, especially if your theory is not wealthy enough to own derivational constraints; the second being that the theory will need to have special ways of distinguishing valence information associated in the dictionary with the lexical item and valence features occurring with those lexical items in individual sentences, in just those cases where the item is compatible with any of several combinations of cases.

These are both, in one way or another, fairly bad notations for case grammar. There is one that is still worse, however, and that is the one by which the case roles of noun phrases are indicated by means of labeled nodes dominating the associated sentence or noun-phrase. The cases are clearly not categories, though in this notation they are treated just like grammatical categories; the theory that represents them in this way needs therefore to distinguish two types of category symbols and needs to have variables ranging over case labels; and the theory needs devices for changing case labels, devices for deleting case labels and restructuring what is left, and so on. The proposal could not be taken seriously enough to be included in this discussion were it not for the fact that it is the practice which I have followed; that transformational rules stated in its terms are fairly easy to conceptualize; that it follows the tradition in transformationalist studies by which labels are assigned to verb-phrase constituents and co-constituents that are not subjects and objects, such as Manner and Extent and Time phrases; and that since case constituents sometimes need to be built up with the addition of complementizers and prepositions and the like, the case labels at least provide foundation nodes onto which these enlarged structures can be built.

Actually the notations which are most pleasing to me on the deep-structure level are unfortunately notations that lend themselves least to the view that deep structure configurations and surface structure configurations belong to the same species. I have in mind a kind of dependency notation which makes use of kernel trees or stemmas each containing one root node, one or more labeled branches, and a variable or index symbol at the leaf end of each branch. The node is a complex symbol containing semantic, phonological and rule features information, as well as the case valence. The branches are labeled with case labels, and are ordered from left to right according to the case hierarchy. The variables at the leaf end of the branches represent the entities which bear case relations to the predicator represented at the node. Any sentence has at base a collection of stemmas of this type, plus information about identities involving the variables; either there can be co-reference among the variables, or some of the variables can be identified with some of the stemmas. That much identifies the semantic interpretation of

the sentence.

As input to the transformational rules, in place of the notion of deep structure, there is what one might call the composition plan of the sentence, the plan by which the various stemmas are to be incorporated into each other to construct the surface sentence. The general effect of the composition plan will be to indicate which variables are to be replaced by lexical items and which stemmas are to be taken as nexus for which other stemmas. Using Sandra Thompson's examples (1970), the two sentences [I know a girl who speaks Basque.] and [A girl I know speaks Basque.] will differ only on the level of the composition plan. The transformations will provide for lexical insertion and lexical modification, and will somehow provide for the construction of the surface sentence from all this.

I have a few proposals abrewing on how such a grammar can operate, but problems associated with deletion, topic/comment, quantification, and the representation of manner and degree adverbs seem at the moment fairly overwhelming. Being now a Californian, I have become acquainted with some people who know a lot about magic and witchcraft. I am counting on their services to help me complete this research.

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